

# Regional Seabird Conservation Plan U.S. Fish and Wildlife Service Pacific Region

## APPENDICES

### **List of Appendices**

- Appendix 1. Treaties, Legislation, Policy, National and International Initiatives, and Jurisdiction.
- Appendix 2. List of U.S. Pacific Islands covered in this plan.
- Appendix 3. National and International Significance of Seabird Breeding Populations in  
USFWS Pacific Region.
- Appendix 4. Seabird Subspecies Breeding in USFWS Pacific Region.
- Appendix 5. Seabird species affected during certain oil spills.
- Appendix 6. Species and Scientific Names Used in Plan.
- Appendix 7. Seabird Species Abbreviations (Alpha Codes) from Patuxent Wildlife Research  
Center, Bird Banding Lab, USGS.
- Appendix 8. Abbreviations used in the Pacific Region Seabird Conservation Plan.
- Appendix 9. Invasive Species that Affect Seabirds, USFWS Pacific Region.

## Appendix 1. Treaties, Legislation, Policies, National/International Initiatives, and Jurisdiction

The US Fish and Wildlife Service has the primary responsibility for the conservation and management of migratory birds, including seabirds. Several international treaties, domestic laws and Executive Orders have been enacted that provide protection for migratory birds and the Service is largely responsible for implementing the statutes, laws and regulations, derived from these. The most important pieces of legislation are: Migratory Bird Treaty Act, Fish and Wildlife Conservation Act, Endangered Species Act, and the National Wildlife Refuge System Administration Act. Each of these statutes is described briefly below.

### ***Treaties and Legislation***

#### Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-718)

The Migratory Bird Treaty Act (MBTA) decreed that all migratory birds were fully protected and, unless permitted by regulation, it was unlawful to take, capture, kill or possess any migratory bird or their parts (including eggs, nests, and feathers). This Act is the domestic law that implements four international conventions (with Canada, Mexico, Japan and Russia) for the protection of a shared migratory bird resources. A full list of the species covered and the regulations derived from the Act are contained in the Code of Federal Regulations, Title 50<sup>1</sup> (50 C.F.R.). The consequence of this legislation is a comprehensive program for migratory bird conservation including management across international borders, maintenance of healthy migratory bird populations, conservation of habitat, and restoration of depleted populations.

#### Fish and Wildlife Conservation Act of 1980, as amended (16 U.S.C. 2901-2911)

The Fish and Wildlife Conservation Act, commonly known as the "Nongame Act", authorized federal assistance to the States for the development and implementation of conservation plans for nongame fish and wildlife and directed Federal agencies to conserve nongame species and their habitats. A 1988 amendment directed the Service to: 1. monitor and assess migratory nongame birds (including seabirds), 2. determine the effects of environmental changes and human

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<sup>1</sup> Some of the seabirds that breed in the USPI (e.g., Tahiti Petrel and Polynesian Storm-Petrel) are not listed in the 50 CFR but the family is included in the Mexican or Canadian conventions. Addition of these species is currently under review by the U.S. Solicitors office.

activities, 3. identify birds of conservation concern that were likely to be candidates for endangered species listing and actions to prevent listing, and 4. report to Congress every five years. Amended again in 1989, the Service was further directed to identify lands and waters in the Western Hemisphere where protection, management, or acquisition would foster the conservation of migratory nongame birds.

Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544)

The Endangered Species Act (ESA) provides for the protection of plants and animals in danger of extinction throughout all or a significant portion of their range and the conservation of ecosystems upon which they depend. The ESA implements the United States' commitment to several international treaties and conventions including: Migratory Bird Treaty; Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere; and the International Convention for the High Seas Fisheries of the North Pacific Ocean. Five species of seabirds that breed in this Region are listed under the ESA and a sixth species (Short-tailed Albatross) regularly visits US islands and has laid several eggs over the past 30 years, but has never successfully reproduced.

National Wildlife Refuge System Administration Act of 1966, as amended (16 U.S.C. 668-668)  
and National Wildlife Refuge System Improvement Act of 1997

The Administration Act established the National Wildlife Refuge (NWR) System and together with the National Wildlife Refuge System Improvement Act of 1997, ensures that the National Wildlife Refuges are managed as a national system of lands and waters for the protection and conservation of national wildlife resources. The main components of the two Acts are a strong conservation mission statement for the NWR System; a requirement to maintain the biological integrity, diversity, and environmental health of the system; a process for determining compatible uses; a recognition of the priority wildlife dependant recreational activities on refuges; and, comprehensive conservation planning requirements. Monitoring of the status and trends of wildlife populations is required on all refuges. A large percentage (>80%) of the seabirds breeding in this Region, nest on islands within the NWR System.

### Other Acts, Treaties and Legislation

Several other Treaties, Conventions, Acts, Laws and Regulations have bearing on the conservation and management of seabirds, however, we will not discuss them in detail here. The Fish and Wildlife Act of 1956, as amended, established the Fish and Wildlife Service within the Department of the Interior and provides broad authority for the management, conservation, and protection of fish and wildlife resources. Other more narrowly focused laws include those governing oil spill response and damage assessment (*e.g.*, Oil Pollution Act) and other maritime contaminant issues (*e.g.*, Federal Water Pollution Control Act); regulation of commercial and sport fisheries (*e.g.*, Magnuson-Stevens Fisheries Conservation and Management Act) including a moratorium of specific fisheries such as the high seas driftnet fisheries that was abolished, in part, due to significant incidental mortality of seabirds (High Seas Driftnet Fishing Moratorium Protection Act); management of coastal habitats where some seabirds, especially terns, nest (*e.g.*, Coastal Zone Management Act and Fish and Wildlife Coordination Act); and, the management of introduced plants that degrade nesting habitat (*e.g.*, Federal Noxious Weed Act). A more complete listing and summary of resource laws of interest to the U.S. Fish and Wildlife Service can be found at <http://laws.fws.gov/lawsdigest/indx.html> and those more specific to migratory birds are summarized at <http://migratorybirds.fws.gov/intrnltr/treatlaw.html>

### Waterbird Bycatch Policy

In 2001, the Service established a policy regarding bycatch of birds in fisheries operations. By acknowledging that substantial numbers of waterbirds (especially seabirds, but also including waterfowl, shorebirds, and other related wading species) were killed annually in fisheries, making waterbird bycatch a serious conservation issue and a violation of the underlying tenets of the MBTA. The goal of the Fish and Wildlife Service (Service) is the elimination of waterbird bycatch in fisheries. The Service will actively expand partnerships with regional, national, and international organizations, states, tribes, industry, and environmental groups to meet this goal. The Service in cooperation with interested parties will aggressively promote public awareness of waterbird bycatch issues, and gather the scientific information to develop and provide guidelines for regulation, management, and compliance. The Service is currently drafting an Action Plan to implement this Policy.

## ***National and International Agreements and Initiatives***

### **International Plan of Action for the Reduction of Seabird Bycatch in Longline Fisheries (IPOA)**

### **National Plan of Action for the Reduction of Seabird Bycatch in Longline Fisheries (NPOA)**

In 1999, the Food and Agriculture Organization (FAO) of the United Nations, adopted the IPOA to address concerns over the significant mortality of seabirds worldwide in connection with longline fisheries. This was in compliance with the Code of Conduct for Responsible Fisheries. The objective of the IPOA was to reduce the incidental catch of seabirds in longline fisheries. Each nation was to assess their own fisheries and those that determined they had a problem were to develop National Plans of Action. This plan would assess the magnitude of the problem, develop a prescription of mitigative measures, outline needed research and development, and direct education and outreach to address the problem. The Service and Department of State (DOS) worked with the NOAA- Fisheries to draft an NPOA for U.S. longline fisheries in 2001. An Interagency Seabird Working Group (ISWG), with representatives from NOAA-Fisheries, USFWS, DOS, and the Fisheries Councils, was formed to guide implementation of the NPOA.

### **Waterbirds for the Americas Initiative and the North American Waterbird Conservation Plan**

The Waterbird Conservation for the Americas Initiative (Waterbird Initiative), launched in 1998, is an international, broad-based, voluntary partnership dedicated to waterbird conservation, that complements the initiatives existing for other bird groups, specifically the North American Waterfowl Management Plan, Partners in Flight, and the national Shorebird Plans, all of which come together in the North American Bird Conservation Initiative (NABCI). The [North American Waterbird Conservation Plan](#) is one product of the Waterbird Initiative. The plan provides a broad scale framework for the conservation and management of 210 species of waterbirds, including seabirds, coastal waterbirds, wading birds, and marshbirds utilizing aquatic habitats throughout North America, Central America, the islands and pelagic waters of the Caribbean and western Atlantic, and the US Pacific Islands and pelagic north Pacific. A regional plan is currently being developed for the California Current System seabirds and coastal waterbirds and another regional plan for the tropical Pacific region will soon be developed. The Service is involved in these planning processes and this SCP will provide much of the groundwork for the regional waterbird plans.

## ***Roles and Responsibilities***

### **USFWS**

The Fish and Wildlife Service is the principal federal agency, in the United States, responsible for the protection and management of migratory birds, as described above. Within the Service, the different divisions have defined, but often overlapping responsibilities concerning the conservation of seabirds.

The Division of Migratory Bird Management has the lead in implementing the Service's responsibilities with regards to migratory birds. This is most often accomplished in conjunction with national and international partners. The Division is entrusted to monitor and manage for healthy migratory bird populations and to ensure that these populations do not become threatened or endangered. Within the Service, the Division of Migratory Birds takes a broad scale approach to migratory bird conservation, managing bird populations throughout their range. Permits to allow the take and/or possession of migratory birds are administered out of this office. This Division has a small staff located in the Regional Office.

Ecological Services includes several key components: Endangered Species, Environmental Contaminants, and Habitat Conservation. Endangered Species has primary responsibility for those species listed under the ESA. Once a seabird is listed as threatened or endangered responsibility passes from the Division of Migratory Birds to Endangered Species. Currently there are six listed species in the Region. Responsibility for candidate species, species that have been petitioned for listing, and Birds of Conservation Concern (BCC) is shared by the two divisions and all efforts are made to alleviate threats and restore populations so that the species will not be listed. Endangered Species consults with other agencies on projects that might affect endangered species and administers the permitting of endangered species take. Environmental Contaminants encompasses the Service's Damage Assessment and Spill Response Division. They are the primary Service contacts in the event of oil or other hazardous substance spills and typically will represent the Service in the Incident Command System during a spill response. They also carry out contaminants investigations to identify and resolve or prevent contaminant impacts to seabirds and other wildlife. The Habitat and Conservation Branch includes the

Coastal Program, Habitat Conservation, and Partnerships programs. Most personnel are located in the state Field Offices (Table xx) and local issues are usually handled at this level.

In addition to these broad responsibilities for seabirds throughout their respective ranges, the Service also has site specific management responsibilities associated with the National Wildlife Refuge (NWR) System. The largest seabird colonies in the Pacific are located on Refuges and numerically, over 80% of the Region's seabirds nest on Refuge lands. The NWRs have responsibility to monitor populations on their lands and to maintain and restore where appropriate, the biological integrity, diversity, and environmental health of the Refuges.

#### Other Federal Agencies

Several other federal agencies have land management responsibilities for seabird colony sites. Bureau of Land Management (BLM) administers the California Coastal National Monument that encompasses most of the islands and rocks off the California coast, not including the large islands in the California Bight (Channel Islands) or the National Wildlife Refuge Islands at Castle Rock and the Farallon Islands. The CCNM colonies are managed by BLM, in partnership with California Department of Fish and Game and California State Parks.

The National Park Service manages three important islands in the northern Channel Islands of California: San Miguel, Santa Cruz (The Nature Conservancy owns and manages the western 3/4 and NPS the western 1/4 of the island), Santa Rosa, Anacapa, and Santa Barbara islands. These islands support important Ashy Storm-Petrel, Brown Pelican, and Xantus's Murrelet colonies. NPS also manages important seabird colonies at Pt. Reyes national Seashore and Golden Gate National Recreation Area. In the tropical Pacific Islands, the NWRs support the highest number and diversity of nesting seabirds, but the NPs are especially important for the species nesting on the high volcanic islands such as Hawaiian Petrels, Newell's Shearwaters and possibly Band-rumped Storm-Petrels at Volcano NP, Hawaii and Haleakala NP, Maui. On American Samoa, the NPs on Tutuila and Ta'u provide habitat for Audubon's Shearwaters, Tahiti and Herald Petrels. Many of these high islands have suffered extensive habitat loss and are infested with introduced species. These NPs often harbor seabird species that are listed under ESA.

Historically the Department of Defense has owned, leased or managed many important islands and seabird colonies. Many military islands have been closed over the past two decades and management has reverted to the Service or in some cases to the state (*e.g.*, Midway Naval Air Station and French Frigate Shoals Coast Guard Loran Station reverted to the Service and Kure Atoll Coast Guard Loran Station reverted to a Hawaii State Bird Sanctuary). Other islands (*e.g.*, San Clemente and San Nicolas islands, CA and Wake Atoll) have remained under DOD jurisdiction. Many of these islands have significant seabird resources. Other military bases are located along the mainland coast or on portions of islands but they provide important habitat (*e.g.*, Kaneohe Bay Marine Corps Air Station, HI and Coronado Naval Base, CA). The missions and goals of these military installations are often at odds with seabird conservation but in other cases DOD provides considerable protection and management directed towards protection and restoration of seabird populations.

Although they do not own or manage lands, National Oceanic and Atmospheric Administration (NOAA)-Fisheries regulate many of the fisheries that impact seabird populations. They have staff to address these interactions and in 2001 a national seabird position was created. NOAA-Fisheries also has important responsibilities in conjunction with oil spill response. National Marine Sanctuaries, which can protect important seabird foraging areas, protect against some commercial development (*e.g.*, oil drilling), and provide buffers for seabird colonies are also managed by NOAA-Fisheries.



## Appendix 2. U.S. Pacific Islands covered in USFWS Regional Seabird Conservation Plan, Pacific Region.

<u>Island Name</u>	<u>Type</u>	<u>Archipelago</u>	<u>Group</u>	<u>Political Status</u>	<u>Administration</u>	<u>Special Status</u>
<b>Hawaii</b>		Hawaiian		State of Hawaii	State of Hawaii	
Hawai'i	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	State of Hawaii	
Maui	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	State of Hawaii	
Kaho'olawe	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	Kaho'olawe Commission	former military bomb range
Lana'i	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	State of Hawaii	
Moloka'i	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	State of Hawaii	
O'ahu	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	State of Hawaii	
Kaua'i	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	State of Hawaii	
Ka'ula	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	State of Hawaii	State Seabird Sanctuary former military bomb range
Ni'ihau	Basalt Island	Hawaiian	main Hawaiian Islands	State of Hawaii	State of Hawaii; privately owned	
Nihoa	Basalt Island	Hawaiian	leeward Hawaiian Islands	State of Hawaii	USFWS	National Wildlife Refuge
Necker	Basalt Island	Hawaiian	leeward Hawaiian Islands	State of Hawaii	USFWS	National Wildlife Refuge
French Frigate Shoals <i>comprised of 10-12 sandy islets &amp; 1 basalt pinnacle</i>	Atoll +Pinnacle	Hawaiian	leeward Hawaiian Islands	State of Hawaii	USFWS	National Wildlife Refuge; former Coast Guard station
Gardner Pinnacles	Basalt Island	Hawaiian	leeward Hawaiian Islands	State of Hawaii	USFWS	National Wildlife Refuge

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<u><b>Island Name</b></u>	<u><b>Type</b></u>	<u><b>Archipelago</b></u>	<u><b>Group</b></u>	<u><b>Political Status</b></u>	<u><b>Administration</b></u>	<u><b>Special Status</b></u>
<b>Hawaii (cont)</b>						
Maro Reef	Atoll-like reef	Hawaiian	leeward Hawaiian Islands	State of Hawaii	USFWS	National Wildlife Refuge
Laysan	Coral Island	Hawaiian	leeward Hawaiian Islands	State of Hawaii	USFWS	National Wildlife Refuge
Lisianski & Neva Shoal	Coral Island & atoll-like reef	Hawaiian	leeward Hawaiian Islands	State of Hawaii	USFWS	National Wildlife Refuge
Pearl and Hermes Reef <i>comprised of 7 islets</i>	Atoll	Hawaiian	leeward Hawaiian Islands	State of Hawaii	USFWS	National Wildlife Refuge
Kure <i>comprised of 4 islets</i>	Atoll	Hawaiian	leeward Hawaiian Islands	State of Hawaii	State of Hawaii	State Seabird Sanctuary former Coast Guard station
<b>Midway Atoll</b> <i>comprised of 4 islets</i>	Atoll	Hawaiian	leeward Hawaiian Islands	unincorporated unorganized insular area	USFWS	National Wildlife Refuge former Naval Air Station
<b>Johnston Atoll</b> <i>comprised of 4 islets</i>	Atoll			unincorporated unorganized territory	jointly administered: USFWS & Defense Threat Reduction Agency	National Wildlife Refuge; military base
<b>Wake Island</b> <i>comprised of 3 islets</i>	Atoll	Marshall		unincorporated territory	Air Force/ Department of Interior	Air Force Base

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<u>Island Name</u>	<u>Type</u>	<u>Archipelago</u>	<u>Group</u>	<u>Political Status</u>	<u>Administration</u>	<u>Special Status</u>
<b>Palmyra</b> <i>comprised of 54 islets</i>	Atoll	Line		incorporated territory	USFWS & The Nature Conservancy	National Wildlife Refuge; TNC Reserve
<b>Kingman Reef</b>	Atoll-like reef	Line			USFWS	National Wildlife Refuge
<b>Jarvis Island</b>	Coral Island	Line		possession	USFWS	National Wildlife Refuge
<b>Baker Island</b>	Coral Island	Phoenix		possession	USFWS	National Wildlife Refuge
<b>Howland Island</b>	Coral Island	Phoenix		possession	USFWS	National Wildlife Refuge
<b>American Samoa</b>		Samoan		unincorporated unorganized territory	American Samoa Government	
Tutu'ila	Basalt Island	Samoan			American Samoa Government	
Aunu'u	Basalt Island	Samoan			American Samoa Government	
Ta'u	Basalt Island	Samoan	Manua Islands		American Samoa Government	
Ofu	Basalt Island	Samoan	Manua Islands		American Samoa Government	
Olosega	Basalt Island	Samoan	Manua Islands		American Samoa Government	
Swains (To'elau Lata Mai)*	Coral Island	Tokelau	* Samoan names for Swains Island and Rose Atoll		American Samoa Government	
Rose (Nu'u Manu)*	Atoll	Samoan			USFWS	National Wildlife Refuge

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<u>Island Name</u>	<u>Type</u>	<u>Archipelago</u>	<u>Group</u>	<u>Political Status</u>	<u>Administration</u>	<u>Special Status</u>
<b>Commonwealth Northern Mariana Islands (CNMI)</b>		Mariana		commonwealth in political union with United States	CNMI Government	
Farallon de Pajaros	Basalt Island	Mariana			CNMI Government	
Maug <i>comprised of 3 islands</i>	Basalt Island	Mariana			CNMI Government	seabird sanctuary
Ascuncion	Basalt Island	Mariana			CNMI Government	
Agrihan	Basalt Island	Mariana			CNMI Government	
Pagan	Basalt Island	Mariana			CNMI Government	
Alamagan	Basalt Island	Mariana			CNMI Government	
Guguan	Basalt Island	Mariana			CNMI Government	
Sarigan	Basalt Island	Mariana			CNMI Government	
Anatahan	Basalt Island	Mariana			CNMI Government	
Farallon de Medinilla	Limestone Island	Mariana			CNMI Government	military bomb range
Saipan	Limestone/ Basalt Islands	Mariana			CNMI Government	
Tinian	Limestone Island	Mariana			CNMI Government	
Aguijan	Limestone Island	Mariana			CNMI Government	
Rota	Limestone/ Basalt Islands	Mariana			CNMI Government	
<b>Guam</b>	Limestone/ Basalt Islands	Mariana		unincorporated organized territory	Guam Government	
Cocos	Coral Island	Mariana	Guam		Guam Government	

Appendix 3. National and International Significance of Breeding Seabird Populations in USFWS Pacific Region.

	Significance of Region 1 Populations					Official Status					
	global <sup>1</sup>	US <sub>2</sub>	signifi- cant	manag- eable	periph- eral	ESA <sup>3</sup>	IUCN <sup>4</sup>	BCC <sup>5</sup> - Nat.	BCC <sup>5</sup> - Reg.	BCC <sup>5</sup> - BCR	
Order PROCELLARIIFORMES											
Family DIOMEDEIDAE											
Short-tailed Albatross		x			x	E	VU				
Black-footed Albatross	x						VU	X	X	5,32,67,68	>95% of the global population breed in HI
Laysan Albatross	x									5,67,68	>95% of the global population breed in HI
Family PROCELLARIIDAE											
Hawaiian Petrel	x					E	VU				endemic to Hawaii
Herald Petrel		x								68	
Tahiti Petrel		x					NT		X	68	
Bonin Petrel		x									
Phoenix Petrel		x					VU	X	X	68	
Bulwer's Petrel	x										largest colony in the Pacific on Nihoa, HI
Wedge-tailed Shearwater		x									
Christmas Shearwater		x								67,68	
Newell's Shearwater	x					T	VU				<i>P.a.newelli</i> endemic to Hawaii
Audubon's Shearwater					x						
Family HYDROBATIDAE											
Fork-tailed Storm-Petrel					x						
Leach's Storm-Petrel					x						
Ashy Storm-Petrel	x						NT	X	X	32	
Band-rumped Storm-Petrel		x				C		X	X	67	majority of the global population breed in CA
Black Storm-Petrel		x									
Tristram's Storm-Petrel		x					NT		X	67	
Polynesian Storm-Petrel		x					VU		X	68	

Appendix 3. National and International Significance of Breeding Seabird Populations in USFWS Pacific Region. (cont.)

	Significance of Region 1 Populations					Official Status					
	global <sup>1</sup>	US <sub>2</sub>	signifi- cant	manag- eable	periph- eral	ESA <sup>3</sup>	IUCN <sup>4</sup>	BCC <sup>5</sup> - Nat.	BCC <sup>5</sup> - Reg.	BCC <sup>5</sup> - BCR	
Order PELECANIFORMES Family PHAETHONTIDAE White-tailed Tropicbird Red-tailed Tropicbird		x	x								globally important colonies
Family SULIDAE Masked Booby Brown Booby Red-footed Booby			x x x								
Family PELECANIDAE Brown Pelican			x			E					
Family PHALACROCORACIDAE Double-crested Cormorant Brandt's Cormorant Pelagic Cormorant		x	x x								
Family FREGATIDAE Great Frigatebird Lesser Frigatebird		x x								68	majority of western subspecies in R1 significant % of southern subspecies in R1
Order CHARADRIIFORMES Family LARIDAE Ring-billed Gull California Gull Western Gull Glaucous-winged Gull Heermann's Gull		x		x x x	x		NT				important wintering population
Western Gull-billed Tern Caspian Tern			x x					X	X	32 5	total US pop of western subspp in R1 hemispherically important numbers

Appendix 3. National and International Significance of Breeding Seabird Populations in USFWS Pacific Region. (cont.)

	Significance of Region 1 Populations					Official Status					
	global <sup>1</sup>	US <sub>2</sub>	signifi- cant	manag- eable	periph- eral	ESA <sup>3</sup>	IUCN <sup>4</sup>	BCC <sup>5</sup> - Nat.	BCC <sup>5</sup> - Reg.	BCC <sup>5</sup> - BCR	
Royal Tern				x							
Elegant Tern		x					NT		X	32	
Arctic Tern					x						BCC in BCR 5 but peripheral in R1
Forster's Tern				x							
Little Tern		x			x						range expansion (Clapp et al. 1993)
Least Tern			x			E					total US pop of western subspp in R1
Gray-backed Tern		x									
Bridled Tern					x						range expansion to Samoa
Sooty Tern			x								globally important colonies
Brown Noddy			x								
Black Noddy		x									<i>A.m. melanogenys</i> endemic to Hawaii
Blue Noddy		x							X	67,68	
White Tern		x									
Black Skimmer				x				X	X	32	
Family ALCIDAE											
Common Murre			x								>98% U.a.californica breed in R1
Pigeon Guillemot			x								distinct subspecies in OR & CA
Marbled Murrelet			x								R1 population threatened
Xantus's Murrelet		x				T	VU				
Ancient Murrelet					x	P	VU	X	X	32	peripheral breeder; important wintering population
Cassin's Auklet				x						32	
Rhinoceros Auklet				x							
Tufted Puffin				x							

<sup>1</sup> >95% of the global population breed in Region 1.

<sup>2</sup> Entire US population breeds in Region 1.

<sup>3</sup> Endangered Species Act Listing status: E-endangered; T-threatened; C-candidate; P-petitioned

<sup>4</sup> IUCN rankings: 3 categories for threatened species: CR-critically endangered; EN-endangered; VU-Vulnerable; 3 categories for species at lower risk: CD-conservation dependant; NT-near threatened; LC-least concern.

<sup>5</sup> BCC = Birds of Conservation Concern (USFWS 2002); Indicates a species listed at the national, regional, or BCR level (including a list of the BCRs.)  
BCR = Bird Conservation Region.

Appendix 4. Seabird Subspecies Breeding in USFWS Pacific Region.

		WA	OR	CA	HI	USPI	# Sub species	Region 1 Subspecies and Global Range (From Clements 2000)
Order PROCELLARIIFORMES								
Family DIOMEDEIDAE								
<i>Phoebastria albatrus</i>	Short-tailed Albatross				b		0	
<i>Phoebastria nigripes</i>	Black-footed Albatross				B		0	
<i>Phoebastria immutabilis</i>	Laysan Albatross				B		0	
Family PROCELLARIIDAE								
<i>Pterodroma sandwichensis</i>	Hawaiian Petrel				B		0	
<i>Pterodroma arminjoniana</i>	Herald Petrel					B	2	<i>P.a. heraldica</i> - Raine I., Tonga & Fr Polynesia to Easter I.
<i>Pterodroma rostrata</i>	Tahiti Petrel					B	3	<i>P.r. rostrata</i> - Marquesas & Society; confined to trop. Pac.
<i>Pterodroma hypoleuca</i>	Bonin Petrel				B		0	
<i>Pterodroma alba</i>	Phoenix Petrel					Ex	0	
<i>Bulweria bulwerii</i>	Bulwer's Petrel				B		0	
<i>Puffinus pacificus</i>	Wedge-tailed Shearwater				B	B	0	
<i>Puffinus nativitatis</i>	Christmas Shearwater				B	B	0	
<i>Puffinus auricularis newelli</i>	Newell's Shearwater				B		2	<i>P.a. newelli</i> - Hawaii endemic
<i>Puffinus lherminieri</i>	Audubon's Shearwater					B	9	<i>P.l. dichrous</i> - islands throughout cent Pac, Samoa to Marquesas
Family HYDROBATIDAE								
<i>Oceanodroma furcata</i>	Fork-tailed Storm-Petrel	B	B	B			2	<i>O.f. plumbea</i> - islands off s AK to No Cal
<i>Oceanodroma leucorhoa</i>	Leach's Storm-Petrel	B	B	B			5	<i>O.l. leucorhoa</i> - n Atlantic; Japan to Aleutians & islands off n MX
<i>Oceanodroma homochroa</i>	Ashy Storm-Petrel			B			0	
<i>Oceanodroma castro</i>	Band-rumped Storm-Petrel				B		0	
<i>Oceanodroma melania</i>	Black Storm-Petrel			B			0	
<i>Oceanodroma tristrami</i>	Tristram's Storm-Petrel				B		0	
<i>Nesofregetta fuliginosa</i>	Polynesian Storm-Petrel					B	0	



Appendix 4. Seabird Subspecies Breeding in USFWS Pacific Region.

		WA	OR	CA	HI	USPI	# Sub species	Region 1 Subspecies and Global Range (From Clements 2000)
Order PELECANIFORMES								
Family PHAETHONTIDAE								
<i>Phaethon lepturus</i>	White-tailed Tropicbird				B	B	6	<i>P.l. dorothea</i> - islands in tropical w Pacific (HI to New Caladonia)
<i>Phaethon rubricauda</i>	Red-tailed Tropicbird				B	B	3	<i>P.r. melanorhynchos</i> - widely in tropical Pac.
Family SULIDAE								
<i>Sula dactylatra</i>	Masked Booby				B	B	5	<i>S.d. personata</i> - islands in central & w Pacific to islands off w Australia
<i>Sula leucogaster</i>	Brown Booby				B	B	4	<i>S.l. plotus</i> - cent Pacific to Indian O and Red Sea
<i>Sula sula</i>	Red-footed Booby				B	B	3	<i>S.s. rubripes</i> - islands in tropical Pacific & Indian O
Family PELECANIDAE								
<i>Pelecanus occidentalis</i>	Brown Pelican			B			5	<i>P.o. californicus</i> - CA and islands off Baja & in Gulf of CA
Family PHALACROCORACIDAE								
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	B	B	B			4	<i>P.a. albociliatus</i> - sw BC to Gulf of CA
<i>Phalacrocorax penicillatus</i>	Brandt's Cormorant	B	B	B			0	
<i>Phalacrocorax pelagicus</i>	Pelagic Cormorant	B	B	B			2	<i>P p. resplendens</i> - sw BC to s Baja
Family FREGATIDAE								
<i>Fregata minor</i>	Great Frigatebird				B	B	5	<i>F.m. palmerstoni</i> - islands in w and central Pacific
<i>Fregata ariel</i>	Lesser Frigatebird					B	3	<i>F.a. ariel</i> - islands in Indian O & Pacific

Appendix 4. Seabird Subspecies Breeding in USFWS Pacific Region.

		WA	OR	CA	HI	USPI	# Sub species	Region 1 Subspecies and Global Range (From Clements 2000)
<i>Order CHARADRIIFORMES</i>								
<i>Family LARIDAE</i>								
<i>Larus delawarensis</i>	Ring-billed Gull	B	B				0	
<i>Larus californicus</i>	California Gull			B			2	<i>L.c. californicus</i> - e WA to WY and CA.
<i>Larus occidentalis</i>	Western Gull	B	B	B			2	<i>L.o. occidentalis</i> - BC to Monterey; <i>L.o. wymani</i> - Monterey to Baja
<i>Larus glaucescens</i>	Glaucous-winged Gull	B	B				0	
<i>Larus heermanni</i>	Heermann's Gull			B			0	
<i>Sterna nilotica</i>	Gull-billed Tern			B			6	<i>S.n. vanrossemi</i> - So Cal to n Baja and nw MX
<i>Sterna caspia</i>	Caspian Tern	B	B	B			0	
<i>Sterna maxima</i>	Royal Tern			B			2	<i>S.m. maxima</i> - coastal US to w Indies, Guianas, Brazil
<i>Sterna elegans</i>	Elegant Tern			B			0	
<i>Sterna paradisaea</i>	Arctic Tern	B					0	
<i>Sterna forsteri</i>	Forster's Tern			B			0	
<i>Sterna albifrons</i>	Little Tern				B	B	6	<i>S.a. sinensis</i> - western Pacific; recent expansion to CNMI & HI
<i>Sterna antillarum browni</i>	California Least Tern			B			3	<i>S.a. browni</i> - So Cal to Baja & w MX
<i>Sterna lunata</i>	Gray-backed Tern				B	B	0	
<i>Sterna anaethetus</i>	Bridled Tern					B?	6	<i>S.a. anaethetus</i> - Ryukyu Is, Taiwan, Philipines, Indonesia & Australia. Recent expansion to Samoa
<i>Sterna fuscata</i>	Sooty Tern				B	B	8	<i>S.f. oahuensis</i> - Bonin Is to Hawaii & So Pacific islands

Appendix 4. Seabird Subspecies Breeding in USFWS Pacific Region.

		WA	OR	CA	HI	USPI	# Sub species	Region 1 Subspecies and Global Range (From Clements 2000)
<i>Anous stolidus</i>	Brown Noddy				B	B	5	<i>A.s. pileatus</i> - Seychelles & Madagascar to Australia, Polynesia & HI.
<i>Anous minutus</i>	Black Noddy				B	B	7	<i>A.m. melanogenys</i> - Hawaii; <i>A.m. marcusi</i> - Wake & CNMI?; <i>A.m. minutus</i> - Am Sam, Lines & Phoenix
<i>Procelsterna cerulea</i>	Blue Noddy				B	B	5	<i>P.c. saxatilis</i> - Marcus I. & no Marsalls to NWHI
<i>Gygis alba</i>	White Tern				B	B	4	<i>G.a. alba</i> - Caroline I. To Hawaii, Clipperton, Cocos & s Atlantic islands
<i>Rynchops niger</i>	Black Skimmer			B			3	<i>R.n. niger</i> - coastal US and MX
Family ALCIDAE								
<i>Uria aalge</i>	Common Murre	B	B	B			5	<i>U.a. californica</i> - no WA to So Cal
<i>Cepphus columba</i>	Pigeon Guillemot	B	B	B			5	<i>C.c. eureka</i> - OR & CA; <i>C.c. adianta</i> - cent Aleutians to WA
<i>Brachyramphus marmoratus</i>	Marbled Murrelet	B	B	B			0	
<i>Synthliboramphus hypoleucus</i>	Xantus' Murrelet			B			2	<i>S.h. scrippsi</i> - Channel I and islands off w coast of Baja
<i>Synthliboramphus antiquus</i>	Ancient Murrelet	B					2	<i>S.a. antiquus</i> - e Asia, Aleutians & s AK
<i>Ptychoramphus aleuticus</i>	Cassin's Auklet	B	B	B			2	<i>P.a. aleuticus</i> - Aleutians & AK to n Baja
<i>Cerorhinca monocerata</i>	Rhinoceros Auklet	B	B	B			0	
<i>Fratercula cirrhata</i>	Tufted Puffin	B	B	B			0	

Appendix 5. Seabird species affected during certain oil spills.

Family and Species	1969 Santa Barbara	1971 San Francisco	1984 Puerto Rican	1986 Apex Houston	1990 American Trader	1991 Tenyo Maru	1997 Kure
<b><i>Gaviidae</i></b>							
Red-throated Loon	X	X	X	X	X	X	X
Pacific Loon		X	X	X	X		X
Common Loon	X	X	X	X	X	X	X
<b><i>Podicipedidae</i></b>							
Red-necked Grebe	X	X	X				X
Horned Grebe	X	X	X	X	X		X
Eared Grebe	X	X	X	X	X		X
Pied-billed Grebe	X	X		X			
Western/Clark's Grebes	X	X	X	X	X	X	X
<b><i>Diomedidae</i></b>							
Laysan Albatross				X	X		
Black-footed Albatross						X	
<b><i>Procellariidae</i></b>							
Northern Fulmar			X	X	X	X	X
Short-tailed Shearwater						X	
Sooty Shearwater					X	X	
<b><i>Hydrobatidae</i></b>							
Leach's Storm-Petrel						X	
Fork-tailed Storm-Petrel						X	
<b><i>Pelecanidae</i></b>							
Brown Pelican	X				X		X
<b><i>Phalacrocoracidae</i></b>							
Double-crested Cormorant	X	X		X	X	X	X
Pelagic Cormorant	X	X		X	X	X	X
Brandt's Cormorant	X	X		X	X	X	X
<b><i>Ardeidae</i></b>							
Green Heron					X		

Appendix 5. Seabird species affected during certain oil spills (cont.).

Family and Species	1969 Santa Barbara	1971 San Francisco	1984 Puerto Rican	1986 Apex Houston	1990 American Trader	1991 Tenyo Maru	1997 Kure
<i>Anatidae</i>							
Tundra Swan							X
Brant							X
Muscovy Duck							X
Wood Duck					X		
Gadwall							X
Northern Pintail		X					X
American Widgeon							X
Northern Shoveler							X
Cinnamon Teal	X						
Green-winged Teal							X
Canvasback	X	X					
Ring-necked Duck		X					
Scaup sp.	X	X	X				X
Surf Scoter	X	X	X	X	X	X	X
Black Scoter	X	X	X	X	X		X
White-winged Scoter	X	X	X	X		X	X
Goldeneye sp.		X					
Bufflehead		X				X	X
Red-breasted Merganser							X
Merganser sp.	X	X					
Ruddy Duck	X	X	X		X		X
<i>Rallidae</i>							
American Coot		X	X		X		X
<i>Laridae</i>							
Bonaparte's Gull					X		
Mew Gull		X		X		X	X
Ring-billed Gull		X		X	X		X
California Gull		X		X	X	X	X
Herring Gull		X			X		

Appendix 5. Seabird species affected during certain oil spills (cont.).

Family and Species	1969 Santa Barbara	1971 San Francisco	1984 Puerto Rican	1986 Apex Houston	1990 American Trader	1991 Tenyo Maru	1997 Kure
<i>Laridae (continued)</i>							
Glaucous-winged Gull		X		X	X	X	X
Western Gull		X		X	X	X	X
Heermann's Gull					X		X
Black-legged Kittiwake					X		
Black Skimmer					X		
Caspian Tern					X	X	
Arctic Tern						X	
<i>Alcidae</i>							
Common Murre	X	X	X	X	X	X	X
Pigeon Guillemot			X			X	
Ancient Murrelet			X				
Marbled Murrelet			X	X		X	X
Cassin's Auklet			X	X	X	X	X
Rhinoceros Auklet	X	X	X	X	X	X	
Tufted Puffin				X		X	
Horned Puffin						X	

## Appendix 6. Scientific Names

### Birds

Laysan Albatross	<i>Phoebastria immutabilis</i>
Short-tailed Albatross	<i>Phoebastria albatrus</i>
Black-footed Albatross	<i>Phoebastria nigripes</i>
Hawaiian Petrel	<i>Pterodroma phaeopygia</i>
Herald Petrel	<i>Pterodroma arminjoniana</i>
Tahiti Petrel	<i>Pterodroma rostrata</i>
Phoenix Petrel	<i>Pterodroma alba</i>
Bonin Petrel	<i>Pterodroma hypoleuca</i>
Dark-rumped Petrel	<i>Pterodroma phaeopygia sandwichensis</i>
Bulwer's Petrel	<i>Bulweria bulwerii</i>
Juan Fernandez Petrel	<i>Pterodroma externa</i>
Northern Fulmar	<i>Fulmarus glacialis</i>
Black-vented Shearwater	<i>Puffinus opisthomelas</i>
Wedge-tailed Shearwater	<i>Puffinus pacificus</i>
Christmas Shearwater	<i>Puffinus nativitatis</i>
Newell's Shearwater	<i>Puffinus newelli</i>
Audubon's Shearwater	<i>Puffinus lherminieri</i>
Short-tailed Shearwater	<i>Puffinus tenuirostris</i>
Sooty Shearwater	<i>Puffinus griseus</i>
Manx Shearwater	<i>Puffinus puffinus</i>
Tristram's Storm-Petrel	<i>Oceanodroma tristrami</i>
Band-rumped Storm-Petrel	<i>Oceanodroma castro</i>
Polynesian Storm-Petrel	<i>Nesofregetta fuliginosa</i>
Ashy Storm-Petrel	<i>Oceanodroma homochroa</i>
Black Storm-Petrel	<i>Oceanodroma melania</i>
Galapagos Storm-Petrel	<i>Oceanodroma tethys</i>
Leach's Storm-Petrel	<i>Oceanodroma leucorhoa</i>
Fork-tailed Storm-Petrel	<i>Oceanodroma furcata</i>
White-tailed Tropicbird	<i>Phaethon lepturus</i>
Red-tailed Tropicbird	<i>Phaethon rubricauda</i>
Brown Pelican	<i>Pelecanus occidentalis</i>
California Brown Pelican	<i>Pelecanus occidentalis californicus</i>
Red-footed Booby	<i>Sula sula</i>
Brown Booby	<i>Sula leucogaster</i>
Masked Booby	<i>Sula dactylatra</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>
Great Frigatebird	<i>Fregata minor</i>
Lesser Frigatebird	<i>Fregata ariel</i>
Snowy Plover	<i>Charadrius alexandrinus</i>

Appendix 6. Scientific Names (cont.)

Bonaparte's Gull	<i>Larus philadelphia</i>
Mew Gull	<i>Larus canus</i>
Ring-billed Gull	<i>Larus delawarensis</i>
California Gull	<i>Larus californicus</i>
Herring Gull	<i>Larus argentatus</i>
Glaucous-winged Gull	<i>Larus hyperboreus</i>
Western Gull	<i>Larus occidentalis</i>
Heermann's Gull	<i>Larus heermanni</i>
Black-legged Kittiwake	<i>Rissa tridactyla</i>
Gull-billed Tern	<i>Sterna nilotica</i>
Western Gull-billed Tern	<i>Sterna nilotica vanrossemei</i>
Caspian Tern	<i>Sterna caspia</i>
Arctic Tern	<i>Sterna paradisaea</i>
Little Tern	<i>Sterna albifrons</i>
Least Tern	<i>Sterna antillarum</i>
California Least Tern	<i>Sterna antillarum browni</i>
Royal Tern	<i>Sterna maxima</i>
Elegant Tern	<i>Sterna elegans</i>
Gray-backed Tern	<i>Sterna lunata</i>
Sooty Tern	<i>Sterna fuscata</i>
Forster's Tern	<i>Sterna forsteri</i>
Black Tern	<i>Chlidonias niger</i>
Brown Noddy	<i>Anous stolidus</i>
Black Noddy	<i>Anous minutus</i>
Blue Noddy	<i>Procelsterna cerulea</i>
White Tern	<i>Gygis alba</i>
Black Skimmer	<i>Rhynchops niger</i>
Common Murre	<i>Uria aalge</i>
Pigeon Guillemot	<i>Cepphus columba</i>
Ancient Murrelet	<i>Synthliboramphus antiquus</i>
Marbled Murrelet	<i>Brachyramphus marmoratus</i>
Long-billed Murrelet	<i>Brachyramphus perdix</i>
Craveri's Murrelet	<i>Synthliboramphus craveri</i>
Xantus's Murrelet	<i>Synthliboramphus hypoleucus</i>
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>
Rhinoceros Auklet	<i>Cerorhinca monocerata</i>
Tufted Puffin	<i>Fratercula cirrhata</i>
Horned Puffin	<i>Fratercula corniculata</i>
Barn Owl	<i>Tyto alba</i>
Indian Myna	<i>Acridotheres tristis</i>



## Appendix 6. Scientific Names (cont.)

### Mammals

cat	<i>Felis catus</i>
dog	<i>Canis familiaris</i>
Indian mongoose	<i>Herpestes javanicus</i>
Norway rat	<i>Rattus norvegicus</i>
black or ship rat	<i>Rattus rattus</i>
Pacific or Polynesian rat	<i>Rattus exulans</i>
House mouse	<i>Mus musculus</i>
Asian ship rat	<i>Rattus tanezumi</i>
feral pig	<i>Sus scrofa</i>
red fox	<i>Vulpes vulpes</i>
feral goat	<i>Capra hircus</i>
rabbit	<i>Oryctolagus cuniculus</i>
European hare	<i>Lepus europaeus</i>
island fox	<i>Urocyon littoralis</i>
gray fox	<i>Urocyon cinereoargenteus</i>

### Reptiles and Amphibians

brown tree snake	<i>Boiga irregularis</i>
monitor lizards	<i>Varanus salvator</i>

### Fish

lanternfishes	<i>Myctophidae</i>
lanternfish	<i>Trachinocephalus myops</i>
hatchetfishes	<i>Sternoptychidae</i>
hatchetfish	<i>Sternoptyx diaphana</i>
larval goatfish	<i>Parupeneus cyclostomus</i>
flying fish	<i>Parexocoetus brachypterus</i>
squirrelfish	<i>Neoniphon sammara</i>
flying squid	<i>Dosidicus gigas</i>
skipjack tuna	<i>Katsuwonus pelamis</i>
yellowfin tuna	<i>Thunnus albacares</i>
blacksmith	<i>Chromis punctipinnis</i>
rockfish	<i>Sebastes spp.</i>
northern anchovy	<i>Engraulis mordax</i>
sandlance	<i>Ammodytes spp.</i>
surfperch	

## Appendix 6. Scientific Names (cont.)

### Invertebrates

mosquito

*Culex quinquefasciatus*

Sea skaters

*Halobates geridae*

squid

### Plants

ironwood

*Casuarina equisetifolia*

common sandbur

*Cenchrus echinatus*

bufflegrass

*Cenchrus ciliaris*

golden crown-beard

*Verbesina encelioides*

naupaka

*Scaevola sericea*

bunch grass

*Eragrostis variabilis*

beachgrass

*Ammophila arenaria*

beach morning glory

*Ipomea pes-caprae*

miconia

*Miconia calvescens*

pu'avai

*Pisonia grandis*

New Zealand spinach

*Tetragonia tetragonioides*

beggar's tick

*Bidens pilosa*

cheeseweed

*Malva paniflora*

woodrose vine

*Operculina ventricosa*

Appendix 7. Seabird Species Abbreviations (Alpha Codes) from Patuxent Wildlife Research Center, Bird Banding Lab, USGS.

<u>COMMON NAME</u>	<u>ALPHA CODE</u>	<u>COMMON NAME</u>	<u>CODE</u>
Short-tailed Albatross	STAL	Ring-billed Gull	RBGU
Black-footed Albatross	BFAL	Heermann's Gull	HEEG
Laysan Albatross	LAAL	Gull-billed Tern	GBTE
Audubon's Shearwater	AUSH	Caspian Tern	CATE
Little Shearwater	LISH	Royal Tern	ROYT
Newell's Shearwater	NESH	Elegant Tern	ELTE
Sooty Shearwater	SOSH	Forster's Tern	FOTE
Flesh-footed Shearwater	FFSH	Arctic Tern	ARTE
Short-tailed Shearwater	SHOS	Least Tern	LETE
Wedge-tailed Shearwater	WTSH	Little Tern	LITE
Christmas Shearwater	CHSH	Sooty Tern	SOTE
Hawaiian Petrel	HAPE	Bridled Tern	BRTE
Dark-rumped Petrel	DRPE	Gray-backed Tern	GRAT
Phoenix Petrel	PHPE	Brown Noddy	BRNO
Bonin Petrel	BOPE	Black Noddy	BLNO
Bulwer's Petrel	BUPE	Blue Noddy	
Fork-tailed Storm-Petrel	FTSP	(ex. Blue-gray Noddy)	BGNO
Leach's Storm-Petrel	LHSP	White Tern	WHITE
Band-rumped Storm-Petrel	BANP	Black Skimmer	BLSK
Black Storm-Petrel	BLSP	Tufted Puffin	TUPU
Tristram's Storm-Petrel	TRSP	Rhinoceros Auklet	RHAU
Ashy Storm-Petrel	ASSP	Cassin's Auklet	CAAU
White-throated Storm-Petrel		Ancient Murrelet	ANMU
(= Polynesian Storm-Petrel)	WHSP	Marbled Murrelet	MAMU
White-tailed Tropicbird	WTTR	Xantus's Murrelet	XAMU
Red-tailed Tropicbird	RTTR	Pigeon Guillemot	PIGU
Masked Booby	MABO	Common Murre	COMU
Brown Booby	BRBO		
Red-footed Booby	RFBO		
Double-crested Cormorant	DCCO		
Brandt's Cormorant	BRAC		
Pelagic Cormorant	PECO		
Brown Pelican	BRPE		
Great Frigatebird	GRFR		
Lesser Frigatebird	LEFR		
Glaucous-winged Gull	GWGU		
Western Gull	WEGU		
California Gull	CAGU		
Unidentified Gull	UNGU		
	<b>ALPHA</b>		

Appendix 8. Abbreviations used in the Pacific Region Seabird Conservation Plan.

ac	acre
AES	USFWS, Ecological Services Program
BCC	Birds of Conservation Concern (USFWS 2002)
BCR	Bird Conservation Region
CA	California
CCS	California Current System
CDFG	California Department of Fish and Game
CNMI	Commonwealth of the Northern Mariana Islands
d	day
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DLNR	Department of Land and Natural Resources, State of Hawaii
DMBM	Division of Migratory Bird Management, Washington DC
DOD	Department of Defense
DOF	Department of Forestry
DOFAW	Hawaii Division of Forestry and Wildlife
EC	USFWS, Division of Environmental Contaminants
EEZ	Exclusive Economic Zone
ENSO	El Nino/Southern Oscillation
ESA	Endangered Species Act
FAO	Food and Agriculture Organization
FDM	Farallon de Medinilla, CNMI
FMP	Fisheries Management Plan
FWO	USFWS Fish and Wildlife Office
ha	hectare
HI	Hawaii
HMS	Highly Migratory Species
HDAR	Hawaii Division of Aquatic Resources
INRMP	Integrated Resources Management Plan
IPOA-Seabirds	International Plan of Action for the Reduction of Seabird Bycatch in Longline Fisheries
km	kilometer
LE	USFWS, Division of Law Enforcement
LOF	List of Fisheries (NOAA)
MBHP	USFWS, Division of Migratory Birds and Habitat Programs
MBTA	Migratory Bird Treaty Act
m	meter
mi	mile
MMPA	Marine Mammal Protection Act
MX	Mexico
NBII	National Biological Information Infrastructure
nm	nautical mile

Appendix 8. Abbreviations used in the Pacific Region Seabird Conservation Plan (cont.).

NMFS	National Marine Fisheries Service (NOAA-Fisheries)
NMS	National Marine Sanctuary
NOAA	National Oceanographic and Atmospheric Administration
NP	National Park
NPOA-Seabirds	National Plan of Action for the Reduction of Seabird Bycatch in Longline Fisheries
NPS	National Park Service
NWHI	Northwestern Hawaiian Islands
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
ODFW	Oregon Department of Fish and Wildlife
OR	Oregon
OSPR	Oil Spill Protection and Response
PAH	poly-aromatic hydrocarbons
PAH	Polycyclic aromatic hydrocarbons
PBDE	polybrominated diphenyl ether
PCB	polychlorinated biphenyls
PDO	Pacific Decadal Oscillation
POBSP	Pacific Ocean Biological Survey Program
POP	persistent organic pollutants
PRBO	Point Reyes Bird Observatory
Service	U.S. Fish and Wildlife Service
TBT	tributyl tin
TE	USFWS, Division of Endangered Species
TNC	The Nature Conservancy
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USPI	U.S. Pacific Islands
WA	Washington
WDFW	Washington Department of Fish and Wildlife
WNV	West Nile Virus

Appendix 9. Invasive species that affect seabirds in USFWS Pacific Region.

Alien Species	Key Seabirds Affected	Island	Success/Failure of Control
<b>Rats</b> Prey on eggs, chicks, & adults of all breeding seabirds but especially the ground nesting petrels, shearwaters, storm-petrels, terns, and alcids. Also destroy vegetation that provides seabird nesting habitat and at some locations can affect seabird predator cycles. <i>R. rattus</i> , <i>R. norvegicus</i> , <i>R. exulans</i> , <i>R. tanezumi</i> is	ashy storm-petrel & Xantus's murrelet in CA, OR, WA  Bonin petrels, Christmas shearwaters at Midway  petrels, shearwaters, storm-petrels in HI and USPI  noddies, terns, shearwaters in CNMI	Anacapa, CA	complete eradication
		San Miguel, CA	complete eradication
		Santa Catalina, CA	
		San Clemente, CA	
		Midway, HI	
		Howland, USPI	complete eradication
		Palmyra, USPI	complete eradication
		Baker, USPI	eradication in progress
		Kure, HI	complete eradication
		Rose, Am. Samoa	complete eradication
		Wake, USPI	complete eradication
		Hawaii-main islands	limited control
		Samoa-main island	limited site specific control
		Marianas-all islands	
		Guam	
<b>House Mouse</b> Prey primarily on the eggs and potentially small chicks of small petrels, storm-petrels, and Xantus's murrelets. Also destroy vegetation that provides nesting habitat and at some locations can affect seabird predator cycles. <i>Mus musculus</i>	ashy storm-petrel Tristram's storm-petrel, Bulwer's petrel Tristram's storm-petrel, Bulwer's petrel Bulwer's petrel Polynesian storm-petrel, Bulwer's petrel	Farallon, CA	eradication planned
		Lisianski, HI	complete eradication
		Midway, HI	eradication planned
		Johnston, USPI	
		Baker, USPI	

Appendix 9. Invasive species that affect seabirds in USFWS Pacific Region.

Alien Species	Key Seabirds Affected	Island	Success/Failure of Control
<b>Cat</b> Prey on eggs, chicks, & adults of all breeding seabirds, especially the ground nesting petrels, shearwaters, storm-petrels, frigatebirds, boobies, gulls, terns, and alcids. Able to take much larger prey than rats. <i>Felis catus</i>	noddies, terns red-footed boobies brown noddies ground nesting seabirds ground nesting seabirds Cassin's auklet, Xantus's Murrelet ground nesting seabirds ground nesting seabirds ground nesting seabirds ground nesting seabirds	Sarigan, CNMI	ongoing control
		Rota, CNMI	virtually extirpated
		Saipan, CNMI	complete eradication
		San Clemente, CA	
		San Nicolas, CA	complete eradication
		Santa Barbara, CA	complete eradication; recovery of Xantus's Murrelet
		Santa Catalina, CA	complete eradication
		San Miguel, CA	complete eradication
		Santa Cruz, CA	complete eradication
		Anacapa, CA	complete eradication
		Jarvis Island	complete eradication; recovery of small birds; Audubon shearwater and Polynesian storm-petrel colonize.
		Baker, USPI	complete eradication
		Howland, USPI	return of BGNO, GBTE, BRNO; shearwater colonize
		Wake, USPI	control ongoing; eradication planned
<b>Dog</b> Prey on eggs, chicks, & adults of all breeding seabirds but especially the ground nesting albatross, boobies, terns, and gulls. <i>Canis familiaris</i>	Albatross, boobies Terns, petrels	Main Islands Hawaii	Limited control at specific locations
		Main islands Samoa	
		Guam	
		CNMI	

Appendix 9. Invasive species that affect seabirds in USFWS Pacific Region.

Alien Species	Key Seabirds Affected	Island	Success/Failure of Control
<b>Red Fox</b> Prey on eggs, chicks, & adults of all breeding seabirds but especially the ground nesting cormorants, alcids, gulls and terns. <i>Vulpes vulpes</i>	Cormorants, gulls, auklets Terns Terns Terns	Bandon area rocks, OR	Control planned
		San Francisco Bay, CA	Ongoing control
		San Diego Bay, CA	Ongoing control
		Bolsa Chica/Seal Beach, CA	Ongoing control
<b>Mongoose</b> <i>Herpestes javanicus</i>	Newell's shearwater, Hawaiian petrel	Main islands Hawaii except Kauai	
<b>Pig</b> Prey on eggs, chicks, & adults of breeding seabirds but especially the ground nesting petrels & shearwaters. Also destroy vegetation that effects seabird nesting habitat. <i>Sus scrofa</i>	Newell's shearwaters	Santa Cruz, CA	eradication planned
		Santa Rosa, CA	complete eradication
		Santa Barbara, CA	complete eradication
		Santa Catalina, CA	
		San Miguel, CA	complete eradication
		main Hawaiian Is	controlled in specific locations
		Am. Samoa (except Rose)	
		Marianas	
<b>Common Myna</b> Taste aversion program at Kilauea Pt. NWR <i>Acridotheres tristis</i>	black & brown noddies, white tern wedge-tailed shearwater	Midway Atoll	
		Main HI islands	Control program at Kilauea Pt., Kauai
<b>Barn Owl</b>			



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Alien Species	Key Seabirds Affected	Island	Success/Failure of Control
<b>Cattle Egret</b>			
<b>Goat</b> judas goat program, successful <i>Capra hircus</i>	general landscape effects	San Clemente I.	complete eradication
<b>Rabbits &amp; Hares</b> Consume vegetation that provides seabird nesting habitat. In worst case scenario will completely denude island of all vegetation. Affects all nesting seabirds but especially those that nest on or under vegetation. <i>Oryctolagus cuniculus</i> , <i>Lepus europaeus</i>	all breeding seabirds all breeding seabirds  Xantus's murrelets Tufted puffin, rhinoceros auklet rhinoceros auklet	Laysan, HI	complete eradication
		Lisianski, HI	complete eradication
		Pearl & Hermes, HI	complete eradication
		Lehua, HI	
		Santa Barbara, CA	complete eradication
		Farallon, CA	complete eradication
		Protection, WA	
<b>Monitor Lizard</b> <i>Varanus Salvator</i>	Red-footed booby Brown noddy	Rota	
		Saipan	
<b>Brown Tree Snake</b> Research underway to develop novel means of controlling or eradicating this predator.	Brown noddy Wedge-tailed shearwater, brown booby	Saipan	
		Guam	control program ongoing
<b>Ants</b> Many species of ants have become established on seabird colonies but the effects on seabirds are poorly understood. Numerous species. <i>Pheidole megacephala</i>	may affect seabirds, terns, shearwaters and boobies	Kure, HI	
		Wake, USPI	

Appendix 9. Invasive species that affect seabirds in USFWS Pacific Region.

Alien Species	Key Seabirds Affected	Island	Success/Failure of Control
<b>Mosquito</b> Mosquitoes are vectors for avian pox and avian malaria that affect some species of seabirds. Numerous species	Albatross, red-tailed tropicbird  Newell's shearwaters	Midway, HI	
		Baker, USPI	died out naturally
		Main islands Hawaii	
<b>New Zealand Spinach</b> <i>Tetragonia tetragonioides</i>	Ashy storm-petrel, Cassin's auklet	Farallon, CA	ongoing control program
		Ano Nuevo, CA	
<b>Ironwood</b> Dense forest habitat on low islands and atolls supports lower densities of surface and burrow nesting species and higher densities of tree nesting terns. <i>Casuarina equisetifolia</i>	Albatross, Bonin petrel, tropicbird	Midway, HI	near eradication Eastern Is, Midway
		Wake, USPI	
<b>Sandbur</b> Alters the habitat by reducing the vertical structure of the vegetation thereby eliminating species that nest under vegetation and provides less binding structure to the soil thereby limiting burrow nesters. <i>Cenchrus echinatus</i>	Petrels, shearwaters & tropicbirds	Laysan, HI	control ongoing; near eradication
		French Frigate Shoal, HI	control ongoing; near eradication
		Lisianski, HI	
		Pearl & Hermes, HI	limited control
		Kure, HI	limited control
<b>Golden crown-beard</b> <i>Verbesina encelioides</i>	all breeding birds but especially ground nesting boobies and albatross	Midway, HI	
		Pearl & Hermes, HI	
		Kure, HI	
<b>European beachgrass</b> <i>Ammophila arenaria</i>	Least tern	Pt. Mugu	ongoing control program

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<b>Alien Species</b>	<b>Key Seabirds Affected</b>	<b>Island</b>	<b>Success/Failure of Control</b>
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<b>Knot Grass</b> Limits nesting habitat for species that prefer open habitat. <i>Digitaria</i> spp.	Sooty tern ground-nesting birds, especially boobies and terns.	Johnston, USPI	
		Howland Island, USPI	